

ONE-YEAR RESULTS FROM THE PROMISE TRIAL, A MULTI-CENTER PROSPECTIVE STUDY OF PROCESS OPTIMIZATION WITH CROSS-SECTORAL CARE FOR PATIENTS RECEIVING HIP OR KNEE ENDOPROSTHESES

U. Betz¹, L. Langanki¹, F. Heid², L. Schollenberger³, K. Kronfeld³, M. Büttner⁴, B. Büchler⁴, L. Eckhard⁵, T. Klonschinski⁵, Ph. Drees⁵ and the PROMISE-Group

¹ Institute of Physical Therapy, Prevention and Rehabilitation, ² Department of Anaesthesiology, ³ Interdisciplinary Center for Clinical Trials, ⁴ Institute of Medical Biostatistics, Epidemiology and Informatics, ⁵ Department of Orthopedics and Traumatology, UNIVERSITY MEDICAL CENTER OF THE JOHANNES GUTENBERG UNIVERSITY MAINZ, Mainz, Germany

Objectives

Knee (TKA) and hip (THA) joint replacements are common procedures in which optimized care processes are applied in many centers. The results for the acute/subacute treatment have consistently been evaluated very positively. However, there is a lack of results after a longer period.

Conclusions

One year after THA and TKA, treated with an optimized cross-sectoral process, very positive results are observed. Pain, physical activity, and quality of life improve significantly. However, our process optimization do not reduce the rate of patients with pain after one year compared to standard therapy. Due to the reduced utilization in the various areas, a cost reduction can be assumed from various cost perspectives.

Method

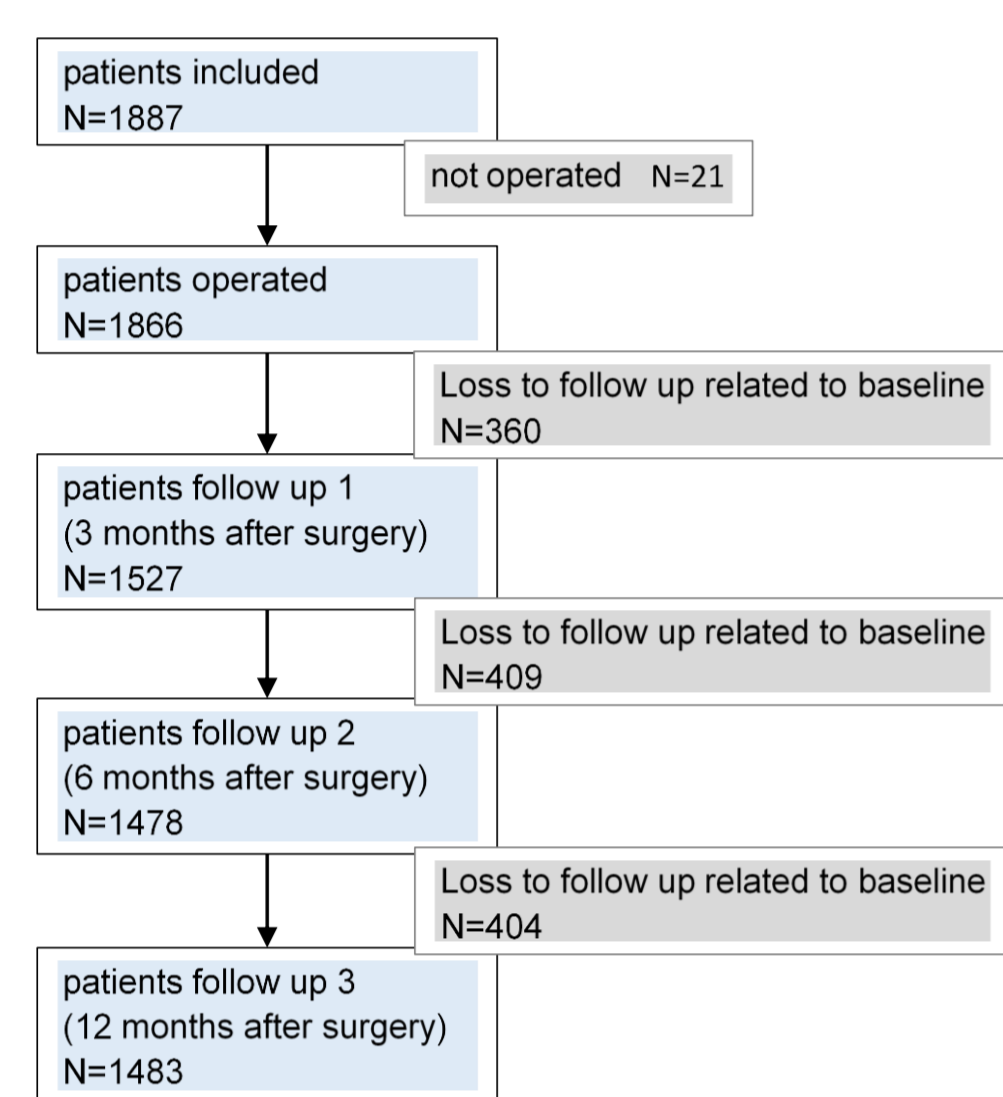


Figure 1: Flow chart on patient inclusion and available results at the different time points of the study

	Missing	Total (n = 1887)	THA (n = 951 [50.4])	TKA (n = 933 [49.4])
	n (%)	n (%)	n (%)	n (%)
Sex				
male		837 (44.4%)	419 (44.1%)	416 (44.6%)
female		1050 (55.6%)	532 (55.9%)	517 (55.3%)
Joint *				
hip left		497 (26.3%)	497 (52.3%)	-
hip right		485 (25.7%)	482 (50.7%)	-
knee left		491 (26.0%)	-	490 (52.5)
knee right		506 (26.8%)	-	504 (54.0%)
Comorbidities				
at least one comorbidity		1472 (78.0%)	726 (76.3%)	744 (79.7%)
mean (SD)		mean (SD)	mean (SD)	mean (SD)
number of comorbidities		1.6 (1.4)	1.6 (1.4)	1.7 (1.4)
ASA		2.2 (0.6)	2.2 (0.6)	2.3 (0.6)
Age		66.6 (10.1)	66.1 (10.6)	67.1 (9.6)
BMI		29.3 (5.7)	28.3 (5.5)	30.2 (5.8)

Table 1: Patients characteristics

The PROMISE trial (1) evaluated 1887 unselected German patients undergoing arthritis-related total hip or knee arthroplasty in three German hospitals. Patients were treated with an optimized cross-sectoral care process based on the ERAS Society Consensus Statement extended by a rehabilitation program. Pain (WOMAC Pain Score), physical activity levels (HOOS/KOOS Sport Subscore), quality of life (EQ-5D-5L), and use of medical services/costs (cost book) were examined at several time points throughout the process up to one year after surgery (1yFU). Costs were analyzed by various cost factors compared with a matched patient group (n=4530) of a health insurance. For flow chart on patient inclusion and available results at the different time points of the study see Figure 1 and for patients characteristics see Table 1.

Results

Cost-effective health care services were used in different amounts by patients in the PROMISE study and the comparison cohort (see Table 2). Related to the baseline measurement all five dimensions of the EQ-5D-5L showed significant improvement at 1yFU (see Table 3). The WOMAC Pain Score (see Figure 1; 0-100; 100 means no pain) increased on average to 88.41 at 1yFU (Baseline (BL): 51.13), but 18.43% patients had still pain (< 75 points) at 1yFU. In the HOOS/KOOS Subscore Sport (see Figure 2; 0-100, 100 highest potential activity score) patients achieved an average of 76.75 points at 1yFU after THA (BL: 23.83) and 59.42 points after TKA (BL: 17.1).

statistically significant reduced number of utilization of PROMISE patients vs. control individuals for:	rate ratio	95% CI
orthopedists	0.74	0.72;0.77
rheumatologists	0.42	0.36;0.49
family physicians	0.72	0.70;0.74
surgeons	0.15	0.12;0.19
physiotherapy	0.92	0.90;0.93
heat/cold therapy	0.58	0.53;0.62
crutches	0.81	0.7;0.92
grasping aids	0.26	0.20;0.34
stocking pullers	0.30	0.23;0.38
compression stockings	0.80	0.70;0.91
statistically significant higher rate of utilization of PROMISE patients vs. control individuals for:		
radiologist	1.15	1.07;1.23
massage/lymph drainage	1.17	1.14;1.20
PROMISE patients vs. control individuals had:		
shorter length of stay (LOS) after surgery	7.3 vs. 9.4	<0.005
longer LOS in Rehabilitation	23.1 vs. 20.9	<0.005
lower number of days of work disability	99.6 vs. 119.9	<0.001

Table 2: Comparison of the use of cost-effective health care services between participants in the PROMISE study and the control group

Mobility		1yFU				
preoperativ	total	no problems	slight problems	moderate problems	severe problems	extreme problems
		% (n)	% (n)	% (n)	% (n)	% (n)
no problems	120	87,5% (105)	12,5% (15)	0	0	0
slight problems	223	78,9% (176)	17,0% (38)	3,1% (7)	0,9% (2)	0
moderate problems	498	74,9% (373)	16,3% (81)	6,0% (30)	2,8% (14)	0
severe problems	384	66,1% (254)	15,9% (61)	10,7% (41)	6,5% (25)	0,8% (3)
extreme problems	8	50,0% (4)	25,0% (2)	12,5% (1)	12,5% (1)	0
Self-care		1yFU				
preoperativ	total	no problems	slight problems	moderate problems	severe problems	extreme problems
		% (n)	% (n)	% (n)	% (n)	% (n)
no problems	760	96,3% (732)	3,0% (23)	0,5% (4)	0,1% (1)	0
slight problems	273	86,4% (236)	10,6% (29)	1,8% (5)	1,1% (3)	0
moderate problems	163	77,9% (127)	14,7% (24)	3,7% (6)	3,1% (5)	0,6% (1)
severe problems	39	74,4% (29)	12,8% (5)	7,7% (3)	5,1% (2)	0
extreme problems	0	0	0	0	0	0
Usual activities		1yFU				
preoperativ	total	no problems	slight problems	moderate problems	severe problems	extreme problems
		% (n)	% (n)	% (n)	% (n)	% (n)
no problems	128	95,3% (122)	3,9% (5)	0,8% (1)	0	0
slight problems	309	82,5% (255)	14,2% (44)	2,9% (9)	0,3% (1)	0
moderate problems	521	75,0% (391)	16,7% (87)	6,0% (31)	2,1% (11)	0,2% (1)
severe problems	258	66,3% (171)	16,3% (42)	10,9% (28)	5,4% (14)	1,2% (3)
extreme problems	12	33,3% (4)	33,3% (4)	16,7% (2)	16,7% (2)	0
Pain / discomfort		1yFU				
preoperativ	total	no problems	slight problems	moderate problems	severe problems	extreme problems
		% (n)	% (n)	% (n)	% (n)	% (n)
no problems	28	53,6% (15)	42,9% (12)	3,6% (1)	0	0
slight problems	196	70,4% (138)	19,9% (39)	7,7% (15)	2,0% (4)	0
moderate problems	520	57,7% (300)	31,2% (162)	8,7% (45)	2,5% (13)	0
severe problems	437	46,5% (203)	32,3% (141)	15,1% (66)	5,3% (23)	0,9% (4)
extreme problems	36	55,6% (20)	22,2% (8)	11,1% (4)	8,3% (3)	2,8% (1)
Anxiety / depression		1yFU				
preoperativ	total	no problems	slight problems	moderate problems	severe problems	extreme problems
		% (n)	% (n)	% (n)	% (n)	% (n)
no problems	724	93,0% (673)	5,8% (42)	0,8% (6)	0,4% (3)	0
slight problems	257	72,8% (187)	19,5% (50)	6,2% (16)	1,6% (4)	0
moderate problems	162	60,5% (98)	26,5% (43)	6,2% (10)	5,6% (9)	1,2% (2)
severe problems	80	46,3% (37)	26,3% (21)	13,8% (11)	12,5% (10)	1,3% (1)
extreme problems	8	50,0% (4)	12,5% (1)	37,5% (3)	0	0

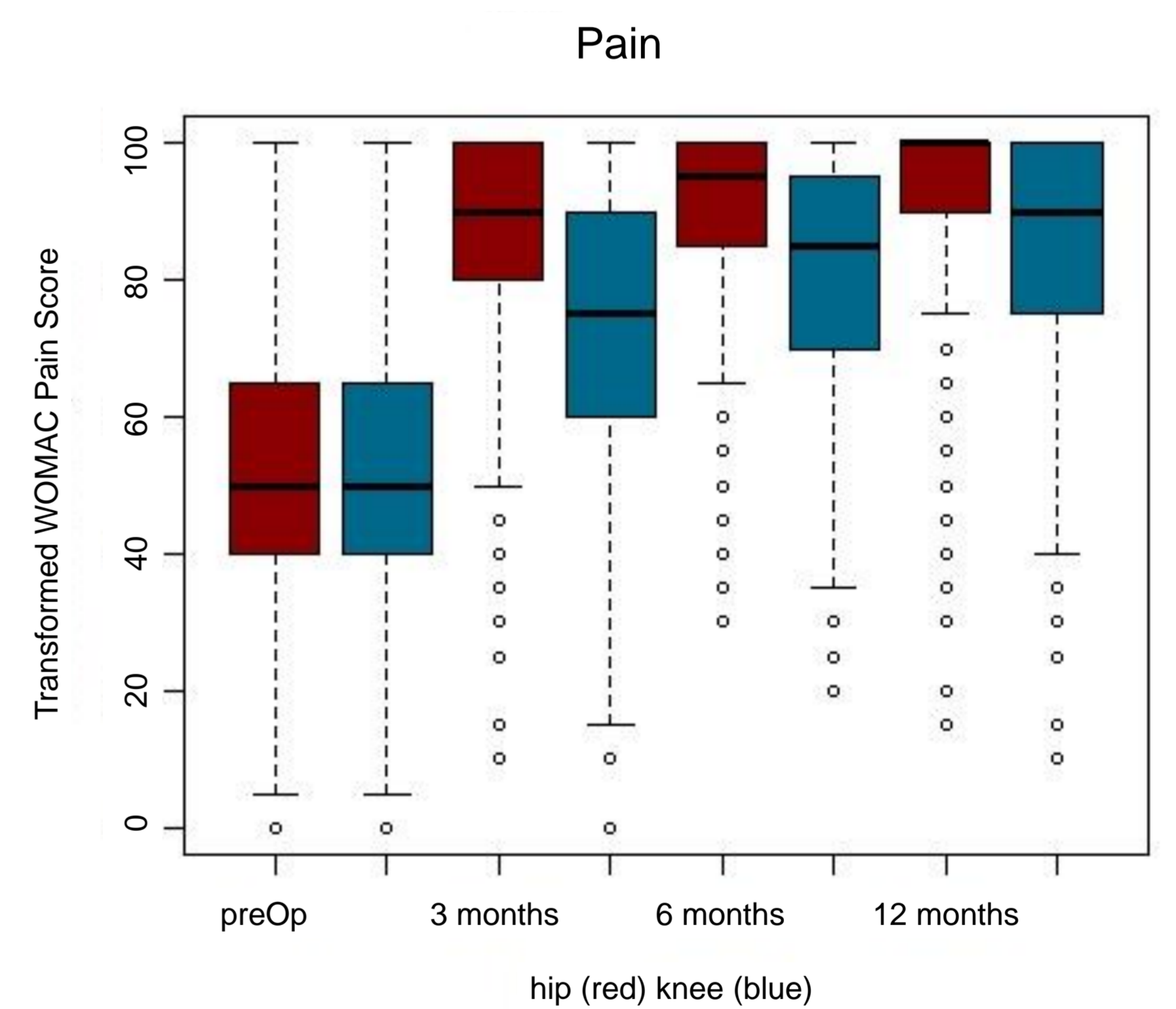


Figure 2: Results for the WOMAC Pain Score at the different time points of the study

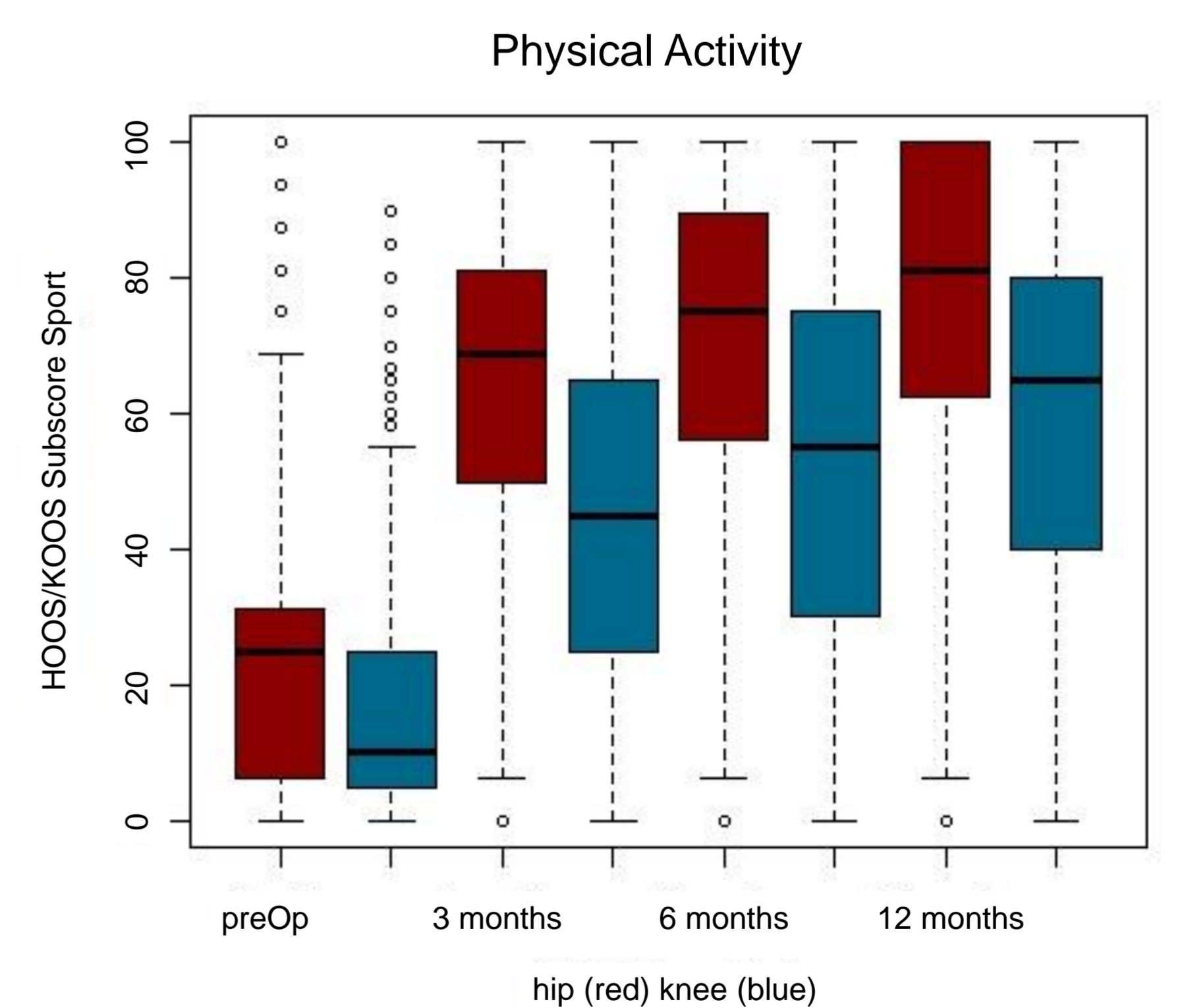


Figure 3: Results for the HOOS/KOOS Subscore Sport at the different time points of the study

Table 3: Comparison of results for all dimensions of EQ-5D-5L between baseline measurement preoperatively and 1yFU

References

¹ Betz, U.; Langanki, L.; Heid, F.; Spielberger, J.; Schollenberger, L.; Kronfeld, K.; Büttner, M.; Büchler, B.; Goldhofer, M.; Eckhard, L.; et al. The PROMISE study protocol: A multicenter prospective study of process optimization with interdisciplinary and cross-sectoral care for German patients receiving hip and knee endoprostheses. Acta Orthop. 2020, 92, 156–162. <https://doi.org/10.1080/17453674.2020.1853927>



Contact

ulrich.betz@
unimedizin-mainz.de

